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Abstract

One of the pervasive problems with means-tested public long term care (LTC) programs is their inability to prevent individuals who could afford private long term services from taking advantage of public care. They often manage to elude the means-test net through “strategic impoverishment”. We show in a simple model how this problem comes about, how it affects welfare and how it can be mitigated.

JEL classification: H2, H5.

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1 Introduction

Public long-term care systems in the OECD are very heterogeneous across and within countries. They vary in many ways: their generosity, the levels of government that are involved, their universality. They are mainly provided by local authorities; they generally cover only a fraction of the needs and range from universal and comprehensive to means-tested systems. In this paper we focus on the means-tested systems that seems to prevail in the majority of countries. The best known and the most studied of them is the Medicaid program in the US, which covers about half of LTC provision for the American elderly dependents.

Means-testing is rarely a first choice. It is often adopted over universal arrangements because it allows devoting scarce funds to those who need them the most. The problem is that in the reality needy people do not always have access to means-tested programs and well to do individuals can benefit from them. Reasons for this paradoxical outcome can be the fact that the neediest often lack relevant information to take up and fear stigmatization more than the members of the middle class. This “take up problem” is well documented for many means tested programs¹. Within the context of LTC, Norton (1995) for instance argues that some households who could benefit from Medicaid prefer not to do so by fear of stigmatization.

In this paper we focus on the opposite problem namely that individuals who are in principle not eligible manage to elude the means-test and end up receiving benefits. This issue is particularly relevant in the area of means-tested public LTC. The reasons are varied. First there is a range of strategies that lead the beneficiaries to impoverish themselves so as to be eligible. This is called in the US the Medicaid impoverishment technique. Second, most LTC programs seem to favor aid to people who are institutionalized and are unable after a few years to meet their financial obligations. Low-income families are rarely in this situation. Third, the means-test is often defined in a rather

¹See Curie and Gahvari (2008) for a survey.

vague and ambiguous way. To be more precise, the very concept of “means” is left vague. Does it concern the income flows or the assets of the beneficiary? Is there a possibility of recouping part of what has been paid by the government at the time of death? Can children be asked to finance their parents LTC expenses before the government intervenes? The law is not clear on that. To take the example of France where there are two means-tested programs for LTC, the PSD (Prestation Spécifique Dépendance) and the APA (Allocation Personnalisée d’Autonomie), the first one can recuperate its participation on the estate of the beneficiary, whereas the second cannot.

Finally and above all, there is a political economy issue. For some reason there very often appears to be a significant political resistance against the effective enforcement of some aspects of the means-test, when the underlying program concerns dependent people. Attempts by the French PSD or the US Medicaid administration to recuperate expenses from the estate of a person who has benefited for years from means-tested services, often make the headlines of newspapers and are perceived as unpopular by the majority of public opinion. In these two countries and many others there exist estate recovery programs that are intended to enable states to recoup their expenses upon a beneficiary’s death. In reality, however, the rate of recovery is extremely low².

This paper presents a simple model which shows how this problem of strategic impoverishment comes about, how it affects welfare and how it can be mitigated. It takes a normative viewpoint and studies the provision of a social LTC in a setting of asymmetric information. We assume throughout the paper that public care cannot be “topped up”. Specifically, one can think of purchasing home care services using one’s own, and one’s children’s, resources versus government provision of a minimum

²In this paper we do not make the distinction between income and wealth. Recently, Dilnot (2011) dealt with the concern that in the UK most dependent people were incurring costs that would force them to sell all their assets. He suggested individuals’ contribution to their long term care costs should be capped at about £35,000, after which they will be eligible for full State support. He also suggested the means-tested threshold, above which people are liable for their full care costs, should be increased from £23,250 to £100,000.

facility. The crucial point is that one consumes either one or the other. The crucial idea represented in our model is that individual wealth may not be observable because parents can transfer part of it to their children. This complicates the implementation of means-tested programs. In other words, the mean-test is based on the parent's *reported* level of their *own* wealth. However, only the wealth left after a possible transfer to their children is observable.

We adopt the simplest setting that allows us to represent the problem's main features. There are two types of families. The first type, labeled *altruistic*, consists of a parent and a child who share the same welfare function. The second type, labeled *selfish*, is composed of a parent and a child who have no links. We assume away private insurance for LTC. The altruistic family is assumed to be relatively well off. In case of dependency, the altruistic parent will get a good level of LTC because of his own resources or because of the aid from his child. The selfish parent is poor, so that without government intervention he will be in very bad shape in case of dependence. We concentrate on the provision of public LTC financed through some form of taxation. All other taxes are taken as given (the income and wealth levels considered are already net of these taxes). In case of perfect information, the government will only help the selfish dependent. Assume now that the government does not observe who is altruistic and who is not, nor the resources of the parents. The altruistic dependent parent can now claim to be poor and obtain public LTC benefits by giving his assets to his child or alternatively forego any assistance from his children. We analyze three approaches that can be combined. The first one relies purely on a process of self-selection. Since the LTC benefit cannot be supplemented by private resources, if its quantity/quality is not very high, those with enough resources or with family support will be deterred from using the means-tested scheme. In other words, to achieve self-selection a lower than otherwise optimal level of LTC is provided and this has of course a welfare cost. Second, we introduce the possibility that individual types (before transfer wealth) can

be observed at some cost (through some kind of audit technology). This possibility relaxes the self-selection constraint and thus mitigates the welfare cost of asymmetric information. The optimal policy balances this benefit against the cost of the audits. The third approach consists in taxing intergenerational transfers (and specifically *inter vivos* gifts). Such a tax has the effect of facilitating the enforcement of means-test. However, it also restricts parents' ability to help their needy children.

2 The model

We consider a society consisting of an equal number of two types of families indexed $i = A$ and S for altruist and selfish. In each type, the child has an income y_i and consumes c_i , which gives him a utility $u(c_i)$; the parent is dependent and has an income (or wealth) w_i and enjoys a level of care m_i , which gives him a utility $u(m_i)$. For simplicity, we assume that dependency occurs with probability 1. Allowing for a lower and more realistic probability would not change the main results. For the similar reasons, we use the same utility function for the child and his dependent parent and assume $u(0) = 0$. In an altruistic family, the parent and the child use total resources $y_A + w_A$ to finance both the consumption c_A and the care m_A so that $c_A = m_A = (y_A + w_A)/2$. In a selfish family, one simply has $c_S = y_S$ and $m_S = w_S$.

A utilitarian government with unrestricted tools and full information would set $c_A = m_A = c_S = m_S = (y_A + w_A + y_S + w_S)/4$. All levels of consumption and care are equalized within and between families.

Assume now that the utilitarian government can only use a flat tax τ on all incomes to finance a public LTC g . For simplicity, we assume that $w_S = y_S = 0$.³ The

³If y_S and w_S are positive, we have

$$u'(c_A) \frac{y_A + w_A}{Y} + u'(c_S) \frac{y_S}{Y} = u'(m_S) \left[1 - \frac{w_S}{Y} \right],$$

where $Y = w_A + w_S + y_A + y_S$ and $c_A = m_A$.

This is of no relevance to our results as long as w_S is not too large.

government's problem is then given by

$$\max_{\tau} \quad 2u\left(\frac{y_A + w_A}{2}(1 - \tau)\right) + u[\tau(y_A + w_A)],$$

which yields $m_S = g = \tau[y_A + w_A] = c_A = m_A$. In words, the poor selfish parents receive a level of public care which is exactly equal to the private care enjoyed by the wealthier altruistic parents.

Let us now turn to the case where types are not publicly observable. It is then tempting for the altruistic family to claim that the parent is resourceless and entitled to receiving g . By assumption if he gets g , he cannot combine it with other type of resources. In other words, topping up of public benefits is not possible. The governments problem is then subject to the following self-selection constraint stating that the altruists are better off telling the truth than mimicking the selfish dependent.

$$2u\left[\frac{(y_A + w_A)(1 - \tau)}{2}\right] \geq u(g) + u((y_A + w_A)(1 - \tau)) \quad (1)$$

If this constraint is binding it can be written as

$$2u(c) = u(g) + u(2c) \quad \Longleftrightarrow \quad u(g) = 2u(c) - u(2c) \quad (2)$$

where

$$c = \frac{(y_A + w_A)(1 - \tau)}{2}.$$

Equation (2) implicitly defines g as a function of c , $g = \hat{g}(c)$. The functional form of $\hat{g}(c)$ depends on the degree of the concavity of u , through the term $2u(c) - u(2c)$. To illustrate this assume that $u(x) = x^{(1-\varepsilon)}/(1-\varepsilon)$. Then one has

$$\hat{g}(c) = c \left[2 - 2^{(1-\varepsilon)} \right]^{\frac{1}{1-\varepsilon}}$$

which yields $\hat{g}(c) = 0$ for $\varepsilon = 0$ and $\hat{g}(c) = c$ for $\varepsilon = \infty$. Differentiating the RHS of this expression shows that \hat{g} increases with the concavity parameter ε and with c .

The Lagrangean expression associated with the problem of the utilitarian government is then given by

$$\begin{aligned}\mathcal{L}_1 &= 2u[c] + u(g) - \mu[g + 2c - (y_A + w_A)] \\ &+ \lambda[g - \widehat{g}(c)],\end{aligned}$$

where we have used the assumption that $u(c_S) = u(y_S) = 0$ and where $u(c) = u(c_A) = u(m_A)$, while $u(g) = u(m_S)$. The FOC's are:

$$u'(g) - \mu - \lambda = 0$$

and

$$2u'(c) - 2\mu - \lambda\widehat{g}'(c) = 0$$

Combining these expressions yields

$$u'(g) > \mu > u'(c),$$

so that $m_A > m_S = g$. In words, to satisfy the self-selection constraint, public care is lower than private care (in altruistic family). Asymmetric information penalizes the selfish dependent to the benefit of the altruists. It is worth noting that this result is independent of the way resources are divided between w_A and y_A . This will no longer be the case with taxation of gifts.

3 Audits

We now introduce the possibility of (random) audits at some cost. An audit is supposed to reveal individual types. In our context this means that it shows if strategic impoverishment has taken place or not. If someone can afford paying for his own LTC and nevertheless benefit from g , he will have to pay a penalty φg where $\varphi > 1$ if audited. Then, we write the self-selection constraint as:

$$\begin{aligned}2u\left(\frac{y_A + w_A(1 - \tau)}{2}\right) - u(g) - (1 - p)u((y_A + w_A)(1 - \tau)) \\ + pu((y_A + w_A)(1 - \tau) - \varphi g) = 0.\end{aligned}$$

Auditing is costly. The cost depends on the frequency of audit p and is denoted $k(p)$

We have thus to modify the revenue constraint as follows:

$$\tau(y_A + w_A) = g + k(p),$$

where $k'(p) > 0$ and $k''(p) > 0$. As usual we have a convex cost function.

We now have a new Lagrangian:

$$\begin{aligned} \mathcal{L}_2 &= 2u(c) + u(g) - \mu(g + 2c - y_A - w_A + k(p)) \\ &+ \lambda[2u(c) - u(g) - (1-p)u(2c) - pu(2c - \varphi g)]. \end{aligned}$$

This yields the following FOC's:

$$\begin{aligned} \frac{\partial \mathcal{L}_2}{\partial g} &= u'(g) - \mu - \lambda[u'(g) - pu'(2c - \varphi g)\varphi] \\ \frac{\partial \mathcal{L}_2}{\partial p} &= -\mu k'(p) + \lambda[u(2c) - u(2c - \varphi g)]. \\ \frac{\partial \mathcal{L}_2}{\partial c} &= u'(c) - \mu\lambda[u'(c) - (1-p)u'(2c) - pu'(2c - \varphi g)] \end{aligned}$$

The parameter φ is given; if it could be freely chosen, one would go back to the first-best solution. The same would hold if audits were free. In general, we have

$$u'(c) = \frac{\mu}{1+\lambda} + \frac{\lambda}{1+\lambda}u'(2c) - p(u'(2c) - u'(2c - \varphi g)) \quad (3)$$

$$u'(g) = \frac{\mu}{1-\lambda} - \frac{\lambda}{1+\lambda}pu'(2c - \varphi g)\varphi \quad (4)$$

These rules suggest that the possibility of audits tends to lead to a more generous level of g . To be more precise, the gap between $c = m_A$ (the level of care received by the wealthy altruist) and g (the level of care of the poor selfish) is lower, at least for given levels of the multipliers μ and λ . To see this, combining (3) and (4) and noting that setting $p = 0$ (or $\varphi = 0$) brings us back to the no audit case we have

$$\begin{aligned} \left[\frac{u'(c)}{u'(g)} \right]_{p=0} &= \frac{\frac{\mu}{1+\lambda} + \frac{\lambda}{1+\lambda}u'(2c)}{\frac{\mu}{1-\lambda}} < \left[\frac{u'(c)}{u'(g)} \right]_{p>0} \\ &= \frac{\frac{\mu}{1+\lambda} + \frac{\lambda}{1+\lambda}u'(2c) - p(u'(2c) - u'(2c - \varphi g))}{\frac{\mu}{1-\lambda} - \frac{\lambda}{1+\lambda}pu'(2c - \varphi g)\varphi} \end{aligned}$$

With p or φ equal to 0, $u'(g) = \mu/(1 - \lambda)$. With $p = 1$, or φ very large, $u'(g) = \mu$. Note that all these comparisons are based on *rules*; since the multipliers are endogenous we cannot compare the actual *levels*.

To sum up, audits which disclose strategic impoverishment can be used as a (partial) substitute to the degradation of public care which is otherwise necessary to properly target the benefits (in a self-selecting way).

4 Taxation of gifts

We now turn to the case where *inter vivos* gifts can be taxed. Descending gifts occur when altruistic parents are richer than their children which is the case on which we concentrate. We posit that these gifts made by wealthy parents to their children can be subjected to some linear tax θ . Denoting by B the gift, the altruistic family has to solve the following problem:

$$\max u(y_A(1 - \tau) + B(1 - \theta)) + u(w_A(1 - \tau) - B)$$

which yields the optimal value of B that is denoted by B^* and that is dependent on both θ and τ . The FOC is:

$$\Delta = u'(c_A)(1 - \theta) - u'(m_A) = 0$$

and then:

$$\frac{dB^*}{d\theta} = \frac{u'(c_A)}{-\Delta_B} \left[R_{R(c_A)} \frac{(1 - \theta)B}{c_A} - 1 \right] \quad (5)$$

where Δ_B is the SOC of the above problem. This expression shows that the tax can decrease or increase the level of the gift. Intuitively one might at first expect the tax to *reduce* the level of the gift. However, as any price change, a variation of the gift tax creates both a substitution and an income effect. The gift tax has a positive effect on the level of gift if the concavity of utility (relative risk aversion or complementarity between c_A and m_A) is big enough. Clearly if c and m were perfect substitutes there

would be no gift as soon as $\theta > 0$. To the contrary if they were perfect complements, gifts would be adjusted to compensate for the tax loss.⁴ More specifically expression (5) shows that the threshold level of R_R above which is gift increases with the tax is larger than 1. Consequently, with a log utility for which $R_R = 1$ we have $dB^*/d\theta < 0$.⁵

The Lagrangian expression is now given by

$$\begin{aligned}\mathcal{L}_3 &= u(y_A(1-\tau) + B^*(1-\theta)) + u(w_A(1-\tau) - B^*) + u(g) \\ &\quad - \mu[g - \tau(y_A + w_A) - \theta B^*] \\ &\quad + \lambda[u(y_A(1-\tau) + B^*(1-\theta)) + u(w_A(1-\tau) - B^*) - u(g) \\ &\quad - u(y_A(1-\tau) + w_A(1-\tau)(1-\theta))]\end{aligned}$$

where $B^* = B^*(\tau, \theta)$. Observe that the mimicking altruists transfer their entire wealth to their children to qualify for public LTC. Recall that the mimicked type S individuals have no resources. This of course reflects the idea of strategic impoverishment which is at the heart of this paper.

To make the presentation simple, we further assume that τ is given; in other words, there is only one way to finance a variation in g , through a tax on gifts. The FOC's with respect to g and θ can be written as follows:

$$u'(g) - \frac{\mu}{(1-\lambda)} = 0 \tag{6}$$

$$u'(c_A) = \frac{\mu}{(1+\lambda)}(1+\eta) + \frac{\lambda}{(1+\lambda)}u'(\tilde{c}_A)\frac{w_A}{B^*}(1-\tau) = 0 \tag{7}$$

where $\tilde{c}_A = y_A(1-\tau) + w_A(1-\tau)(1-\theta)$ is the children's consumption in case of mimicking and

$$\eta = \frac{\theta \partial B^*}{B^* \partial \theta},$$

the elasticity of bequests with respect to the tax rate. Naturally we have $\tilde{c}_A > c_A$.

To interpret these equations, we proceed in different steps. Let us first assume that mimicking is not possible because types are observable ($\lambda = 0$). We then have a simple

⁴To illustrate this in the simplest possible way, take the extreme case where $y_A = 0$ and $\tau = 0$. Under perfect complementarity we then obtain $w_A - B = B(1-\theta)$, so that $B = w_A/(2-\theta)$ which *increases* with θ .

⁵Except when $y_A = 0$, in which case we have $c_A = B(1-\theta)$ and $dB^*/d\theta = 0$.

formula

$$u'(c_A) = u'(g) [1 + \eta],$$

or

$$\frac{u'(c_A)}{u'(g)} \begin{matrix} \geq \\ \leq \end{matrix} 1 \quad \text{iff} \quad \eta \begin{matrix} \geq \\ \leq \end{matrix} 0$$

so that

$$c_A \begin{matrix} \leq \\ \geq \end{matrix} g \quad \text{iff} \quad \eta \begin{matrix} \geq \\ \leq \end{matrix} 0$$

In words, if the effect of the tax on gifts is negative (positive), the level of consumption of the altruistic child will be larger (smaller) than the level of public care received by the selfish parent. Remember that $c_A < m_A$ as long as $\theta > 0$. Put differently, when η has the “expected” sign (namely negative) we continue to have a quality degraded public care. However, when gifts increase with the tax, the result might be reversed so that public care would *exceed* private care. Recall that we are in the case where types are observable (so that self-selection is not an issue).

We now reintroduce the self-selection constraint but assume that the tax on gifts is non distortionary. That is, it is not proportional to B but lump-sum and denoted $\bar{\theta}$. The family utility of the altruists is now given by

$$u(y_A(1 - \tau) + B) + u(w_A(1 - \tau) + B - \bar{\theta}),$$

and the FOC is

$$u'(c_A) = u'(m_A).$$

In that case we have

$$\frac{\partial \mathcal{L}_3}{\partial \bar{\theta}} = -u'(c_A)(1 + \lambda) + \mu + \lambda u'(\tilde{c}_A)$$

so that

$$\frac{u'(c_A)}{u'(g)} = 1 - \lambda - \frac{\lambda(1 - \lambda)}{\mu} [u'(c_A) - u'(\tilde{c}_A)] < 1.$$

which implies that $g < c_A = m_A$. In other words we return to the case where quality of public care is degraded as compared to private care.

Let us now turn to the general case with both a binding incentive constraint and a distortionary gift tax. Combining the FOCs (6) and (7) and rearranging yields

$$\frac{u'(c_A)}{u'(g)} = (1 - \lambda)(1 + \eta) - \frac{\lambda(1 - \lambda)}{\mu} \left[u'(c_A) - u'(\tilde{c}_A) \frac{(1 - \tau)w_A}{B^*} \right]. \quad (8)$$

While equation (8) is rather simple, it does not yield a straightforward and unambiguous comparison between c_A , m_A and g . Since the first setting considered above, name the case where types are observable, has shown some ambiguity, this in itself is not surprising. Still, based on the above results one would have conjectured that $m_A > c_A > g$ always obtains for $\eta < 0$, while a positive gift-tax elasticity might give rise to some ambiguity. However, a simple inspection of the expression 8) shows that this is not immediately obvious. While the first term on the RHS is then indeed smaller than 1, we can't determine the sign of the second term. In words, without further specification we cannot assert whether the poor dependent will be worse off than the child of the rich dependent.

To get some more insight, let us look at some special cases. Assume $y_A = \tau = 0$ and that $u(x) = x^{1-\varepsilon}/(1-\varepsilon)$. In that case, the term in brackets on the RHS is positive (negative) for $\varepsilon > (<)1$ or equivalently $\eta > (<)0$.⁶ Note that when $\varepsilon = 1$ we have

$$\frac{u'(c_A)}{u'(g)} = 1 - \lambda < 1.$$

In other words, with a logarithmic utility, $g < c_A < m_A$. By continuity, when $\varepsilon > 1$ is close to 1 we maintain the result that $m_A > c_A > g$. For high values of ε (or η) the term in brackets is positive but the term $(1 - \lambda)(1 + \eta)$ can be large. On the other way around, for low values of ε , the term in brackets is negative and $(1 - \lambda)(1 + \eta)$ can turn negative. The signs of the *two* terms are then reversed so that the ambiguity persists.

⁶ $u'(c_A) - u'(\tilde{c}_A) \frac{w_A}{B^*} = \frac{(1-\theta)^{-\varepsilon}}{B} [B^{1-\varepsilon} - w_A^{1-\varepsilon}] \gtrless 0$
iff $\varepsilon \gtrless 1$

5 Conclusion

One of the pervasive problems with means-tested LTC programs is their inability at avoiding abuses, namely that individuals who can afford directly or through their family paying for their own LTC manage to get through the means tests and thus endanger the sustainability of the system. The purpose of this paper was to present a formalization of what can be called strategic impoverishment and the ways it can be avoided or at least mitigated. Three devices were analyzed. In the first the public benefice is kept so low that altruistic families prefer not to use it for their own dependent. In other words, since the means-testing is imperfect and can be circumvented it may be necessary to supplement it by a mechanism that relies on self-selection. This is possible as long as the public benefits cannot be supplemented by private resources. Second, we show that if making the testing for means is not too costly the self-selection constraint can be relaxed and the public benefit made more generous. The third avenue we explored was that of introducing an *inter vivos* gift tax which makes less attractive for well to do elderly to pass their wealth to their children and use the public compensation. While this appears to be intuitively appealing, our results suggest that this instrument may be less effective than one could have expected.

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